# Revolutionizing Vital Sign Measurement with Remote Photoplethysmography (rPPG) in Healthcare

## Presentation details

Remote photoplethysmography (rPPG) and photoplethysmography (PPG) have transformed the landscape of vital sign measurement. These technologies extract a blood volume pulse (BVP) signal from facial or finger videos, providing estimates of heart rate (HR), heart rate variability (HRV), respiratory rate (RR), oxygen saturation (SpO2), blood pressure (BP), hemoglobin (Hb), and blood glucose (BG). However, current market solutions and research artifacts often capture only a subset of these vital signs, with a limited accuracy threshold (error rate of $\geq \pm 5\%$). This underscores the need for further innovation in video processing, BVP signal extraction and denoising, and the development of more advanced artificial intelligence (AI) models.

In this presentation, I will outline our contributions to this growing field, discussing key components of the modular rPPG pipeline. The main parts of the presentation will include face detection, region of interest (ROI) selection, and the extraction of the BVP signal, which are all essential for accurate vital sign measurements. Our published work has laid the foundation for this effort, and we are now focusing on refining the pipeline to tackle challenges with light and motion noise, and innovating AI models to improve the accuracy. In this talk, I will explore the technical innovations behind each part of the pipeline, highlight current challenges in achieving high accuracy, and discuss potential improvements driven by multidisciplinary research efforts.